IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re patent application of:	)	
	)	Before the Examiner
Garret D. Cawthon	)	Marina Lamm
	)	
Serial No. 10/626,069	)	
	)	Group Art Unit 1616
Filed July 24, 2003	)	
	)	
METHODS COMPOSITIONS AND SYSTEMS FOR THE PREVENTION AND TREATMENT OF DIAPER RASH	)	

DECLARATION UNDER 37 C.F.R. §1.132

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

I, Garret D. Cawthon, hereby declare that:

1. I am the inventor on the above-captioned patent application and am familiar with its content.

2. My degrees include a B.S. degree in Chemical Engineering from the University of Louisville, M.Eng. in Chemical Engineering with Honors from the University of Louisville, a Ph.D. in Chemical Engineering from The Ohio State University, and an Entrepreneurship M.B.A. with Distinction from the University of Louisville. I have significant experience in research relating to polymer engineering, including significant work for Dow Corning and Ashland Chemical, both of which are companies that manufacture and sell compounds that can be included in diaper rash treatment compositions described in the present application. Further

information relating to my education and experience in this field is provided in my *curriculum vitae*, a copy of which is attached hereto.

3. I have carefully reviewed the outstanding Office Action dated June 16, 2005, in the present case, and I have also carefully reviewed the prior Office Action dated November 26, 2004. In particular, I have reviewed the assertions that the subject matter recited in the pending claims would have been obvious to a person of ordinary skill in the art in view of various combinations of prior patents or patent applications. I have also considered the current amendments to claims 39, 58 and 59 that are set forth in the document entitled "Response After Final Office Action" to which the present Declaration is attached.

4. For the reasons set forth herein, I believe: (1) that a person of ordinary skill in the art would not have been motivated to modify the teachings of the cited references in a manner that would be necessary to arrive at the presently claimed invention, (2) that the present invention proceeds contrary to accepted wisdom that existed at the time the application was filed, (3) that even if a suggestion would have been made to a person of ordinary skill in the art at the time of the invention to modify a low viscosity, sprayable drug-delivery composition by adding high viscosity barrier-type ingredients in amounts necessary to provide a composition having the physical properties described and claimed in the present application, he or she would have expected the operability (i.e., sprayability) of the spray system to be degraded to a point where the modification would not be desirable, and he or she therefore would have had no reasonable expectation of success, (4) that even if a suggestion would have been made to a person of ordinary skill in the art at the time of the application to modify a highly viscous, hydrophobic barrier composition by adding viscosity-reducing or hydrophobicity-reducing ingredients at a level necessary to provide a composition suitable for passage through an atomizing spray dispenser, as described and claimed in the present application, he or she would have expected the operability (i.e., barrier functionality) of the barrier composition to be degraded to a point where the modification would not be desirable, and he or she therefore would have had no reasonable expectation of success, and (5) that the claimed invention therefore would not have been obvious over the disclosures in the references cited by the Examiner.

5. With respect to the rejection of claims 39, 40, 44-48 and 54-58 under 35 U.S.C. §103(a), as being unpatentable over Adams et al. (EP 191 128) in view of Clark et al. (US 6,103,245), when considering the question of whether a person of ordinary skill in the art would have been motivated to combine or modify the teachings of these references in the manner suggested in the Office Action, it is important to remain focused on the physical properties of the composition that are recited in the pending claims, i.e., to note that the pending claims recite a composition having "a viscosity sufficiently low to allow the composition to be atomized upon passage through the atomizing spray dispenser and sufficiently high that the coating does not run off of the skin treatment area." (emphasis added). Although there is a statement in the first Office Action (mailed November 16, 2004) that the Adams et al. reference "teaches compositions in the form of aerosols," (11/16/2004 Action at Page 4), there is no acknowledgement of the importance of the claimed physical properties of the composition recited in the pending claims to the analysis, and there appears to have been no consideration of what would motivate a person of ordinary skill in the art in the selection of ingredients. Rather, the focus of the remarks in the Actions is solely upon the question of whether a person of ordinary skill in the art would include the identified ingredients in a diaper rash treatment composition, without regard to the physical properties of the composition, and without regard to the important fact that a person of ordinary skill in the art would have found no motivation in the prior art to deliver a barrier-type diaper rash composition via an atomizing spray dispenser in the first place. In other words, the analysis set forth in the Office Actions overlooks the importance of the fact that the pending claims recite compositions having specific physical properties, namely, "a viscosity sufficiently low to allow the composition to be atomized upon passage through the atomizing spray dispenser and sufficiently high that the coating does not run off of the skin treatment area." (emphasis added). While the Action dated 11/16/2004 suggests that the physical properties can simply be optimized to "to obtain the desired sprayability of the composition," (11/16/2004 Action, Page 5), this conclusory statement ignores the fact that a person of ordinary skill in the art would not have attempted to optimize physical properties in this manner because he or she would have had no expectation that a barrier-type

diaper rash composition could even be formulated to have acceptable sprayability characteristics and also acceptable barrier functionality when spray coated on a skin treatment area.

6. The outstanding Action asserts that a person of ordinary skill in the art would be motivated to combine these references because Adams et al. pertains to "the difficulties in 'protecting the baby's bottom from prolonged exposure to the effects of ammonium compounds on the baby's skin' and caring for skin irritations such as chapping, rashes, reddening, tenderness and the like," and Clark et al. indicate "success in using micronized zinc oxide, silicone and/or petrolatum in topical barrier compositions." (06/16/2005 Action at Page 4). These statements ignore that the references lack any suggestion to attempt to formulate a barrier-type diaper rash composition that could be delivered via an atomizing spray dispenser. The Action asserts that a person of ordinary skill in the art would be motivated to combine the references simply because both references describe compositions that can be used to treat diaper rash, and thus ingredients that can be used to treat diaper rash. However, simply combining ingredients that are considered to be acceptable for inclusion in a diaper rash treatment composition is not sufficient to arrive at the present invention as recited in the pending claims, and the identification of all known ingredients that might be suitable for inclusion in a diaper rash composition would not have motivated or enabled a person of ordinary skill in the art to practice the present invention. Indeed, based upon my experience and knowledge in this field, I submit that a person of ordinary skill in the art at the time of the present application would not have believed that a composition could even be formulated to be capable of BOTH being applied to a skin treatment area via an atomizing spray dispenser AND providing a suitable barrier functionality for the treatment of diaper rash. These characteristics are at odds with one another, and a person of ordinary skill in the art would not have believed that such a formulation could be developed. There is certainly no description or suggestion in the cited references of a composition that has both of these capabilities. Absent the motivation provided by the present invention, a person of ordinary skill in the art would not have combined ingredients from the respective references in a manner that would be necessary to practice the present invention.

7. Given that simply selecting ingredients from the various references itself is not sufficient to arrive at the present invention, a person of ordinary skill in the art would need to find further motivation to combine suitable ingredients in a suitable manner to provide a composition that has physical properties that "allow the composition to be atomized upon passage through the atomizing spray dispenser" and with a viscosity "sufficiently high that the coating does not run off of the skin treatment area." Neither of the cited references supplies the motivation to combine ingredients in this manner, as the present application describes and claims. There is simply no teaching or suggestion of a composition in the cited references that has the combination of physical properties discussed herein.

8. It is also noteworthy that the disclosure of Adams et al., within its four corners, provides support for the contentions of the preceding paragraphs. In particular, Adams et al. describes a variety of delivery systems featuring a variety of different physical forms for delivering 8 Hydroxy Quinoline Sulfate or Parachlorometaxylenon to treat a skin irritation, and all of the compositions described therein include barrier-type ingredients EXCEPT the sprayable compositions described therein. The various physical forms of carrier formulations for delivering the active agent 8 Hydroxy Quinoline Sulfate or the active agent Parachlorometaxylenol described in Adams et al. include wipe-on stick form, lotion form, powder form, aerosol form, cream form, ointment form, jelly form and oil form. It is important to recognize, however, that although some of the formulations described in Adams et al. do include some barrier-type ingredients, there is no mention of any of these barrier-type ingredients being included in any of the sprayable compositions described in Adams et al., even though sprayable drug delivery systems are described therein. Indeed, all of the formulations described in Adams et al. as being sprayable are very low viscosity compositions that would be incapable of forming a coating on a skin treatment area without running off of the skin treatment area. Thus, even within the four corners of the Adams et al. reference is evidence that a person of ordinary skill in the art would simply not be motivated to provide a sprayable composition that includes ingredients imparting the physical properties described and claimed in the present application. Thus, the Adams et al. reference and the Clark et al. reference teach away from the present invention.

9. The Examiner cites the *In re Gurley* case in support of the proposition that, "a prior art reference may be considered to teach away when 'a person of ordinary skill, upon reading the reference, ... would be led in a direction divergent from the path that was taken by the Applicant.'" (06/16/2005 Action, Page 5). I submit, based upon my experience and knowledge in this field, that a person of ordinary skill, upon reading the Adams et al. and Clark et al. references, would be led in a direction away from including viscosity-increasing barrier-type ingredients in a composition that is to be sprayed through an atomizing spray dispenser, in amounts that would be necessary to provide the physical properties described and claimed in the present application (i.e. physical properties that "allow the composition to be atomized upon passage through the atomizing spray dispenser" and with a viscosity "sufficiently high that the coating does not run off of the skin treatment area"). To make the conclusory statement in the Action that, "There is nothing in Adams et al. that 'would discourage' a person of ordinary skill from using ingredients of Clark et al. and formulating them into an aerosol composition," ignores the reality of what a person of ordinary skill would have taken these references, and the entire body of prior art, to suggest. I believe, and respectfully submit, that a person or ordinary skill in the art at the time the application was filed would have taken the references to suggest that only very low viscosity compositions are suitable for inclusion in a composition that is intended to be applied by spray delivery, and there is no indication in either of these references that a composition even exists that has the physical properties described and claimed in the present application (i.e. physical properties that "allow the composition to be atomized upon passage through the atomizing spray dispenser" and with a viscosity "sufficiently high that the coating does not run off of the skin treatment area").

10. The present invention proceeds contrary to the accepted wisdom that existed at the time the application was filed. To accurately understand the suggestive effect of the cited references, and to fully appreciate what the cited references would suggest to one skilled in the art at the time of the invention, it is important to consider the art as a whole at the time the invention was made, including trends and beliefs in the field of diaper rash treatment and the perspective of a person skilled in the art. A person of ordinary skill in the art at the time of the present invention would have understood that all diaper rash treatment products fall into one or both of the following

two categories: "protective barrier" compositions and "active agent delivery" compositions. Of course, a given product could belong in both categories, i.e., a protective barrier composition could also include one or more active agents. However, one important distinction between these two categories of diaper rash treatment products is the following: while active agent delivery compositions could take a wide variety of physical forms (i.e., aqueous liquids, emulsions, creams, ointments, pastes, powders or other solids), the physical form of protective barrier compositions was and is relatively uniform: a highly viscous, typically hydrophobic, paste, ointment or cream. Such highly viscous compositions were believed to be necessary to provide a suitable protective barrier product.

11. Significant efforts have been made in the prior art, and significant resources have been devoted to efforts to identify the precise cause or causes of diaper rash, with the belief that this would enable the development of formulations that include active ingredients selected to address the cause more directly. Even in view of significant efforts to identify the specific cause of diaper rash, it was generally believed at the time the present application was filed, and is generally believed at this time, that the most important feature of a diaper rash treatment composition is its ability to provide a physical, non-soluble barrier between urine and/or feces and the underlying skin. As stated at page 3 of the present application:

> Because the suspected agents of diaper rash ... all possess diverse properties and require varied therapies, conventional methods of treatment for diaper dermatitis have been directed toward a straightforward attempt to minimize the contact of the skin with the feces or urine present in a soiled diaper. An artificial barrier is usually provided between the skin and the body waste to accomplish this... [Because] the exact components of urine or feces which act as factors or cofactors contributing to diaper dermatitis have never been precisely identified, the most effective method of treating diaper rash to date has been the artificial barrier.

12. In keeping with the trend of providing an artificial barrier in conventional treatments of diaper rash, a wide variety of highly viscous pastes, ointments and creams have been developed to be applied to skin in an effort to provide a suitable barrier to prevent skin contact with urine and/or fecal matter. Because urine is an aqueous liquid, and fecal matter sometimes

also has a high water content, it has been long understood and widely accepted that, to be effective, the paste, ointment or cream should be formulated as a highly viscous, hydrophobic preparation.

13. In view of this background, it is apparent that the present invention proceeds contrary to the accepted wisdom that existed at the time the application was filed. A person of ordinary skill in the art at the time of the present invention would have understood the limitations on the physical characteristics of ingredients in a barrier composition, and would not have been motivated to add ingredients into a barrier formulation that would reduce the viscosity or hydrophobicity thereof, much less try to formulate a barrier composition that could be passed through an atomizing spray delivery mechanism. Similarly, a person of ordinary skill in the art would have had no motivation to pluck ingredients from a "protective barrier" composition for inclusion in a liquid "active agent delivery" composition.

14. Even in the event a suggestion would have been made explicitly to a person of ordinary skill in the art at the time of the application to modify a low viscosity, sprayable composition by adding high viscosity barrier-type ingredients at a level necessary to provide a composition having the physical properties described and claimed in the present application, he or she would have expected the operability (i.e., sprayability) of the spray system to be degraded to a point where the modification would not be desirable. He or she therefore would have had no reasonable expectation of success, and would not have been motivated to even attempt to make such modifications. Similarly, but from a different perspective, in the event a suggestion would have been made explicitly to a person of ordinary skill in the art at the time of the application to modify a highly viscous, hydrophobic barrier composition by adding viscosity-reducing or hydrophobicity-reducing ingredients in amounts necessary to make a composition suitable for passage through an atomizing spray dispenser, as described and claimed in the present application, he or she would have expected the operability (i.e., barrier functionality) of the barrier system to be degraded to a point where the modification would not be desirable, and he or she therefore would have had no reasonable expectation of success, and would not have been motivated to even attempt to make such modifications. The undersigned believes that the prior art is devoid of any information suggesting that the combination of properties recited in the pending claims would be

achievable in a composition as recited in the pending claims, as amended. Indeed, based upon my experience and knowledge in this field, I believe that a person of ordinary skill in the art at the time of this application would not have expected any composition having a viscosity "sufficiently high that the coating does not run off of the skin treatment area" as recited in the claims, as amended, also to be suitable for delivery through an atomizing spray dispenser, as also recited in the pending claims, as amended.

15. Reference is made in the Action to the Mulder patent in support of the proposition that a person of ordinary skill in the art would be motivated to include viscosity-increasing ingredients in a diaper rash spray composition. In this regard, the Action states that, "This is further supported by the teachings of Mulder, who teaches using zinc oxide as well as lanolin oil, waxes, fatty acids, fatty esters and other high viscosity ingredients in spray-on wound healing formulations." (06/16/2005 Action at Pages 5-6). With regard to Mulder, I believe that this reference is nonanalogous art. I am aware of the rule in the MPEP that, "In order to rely on a reference as a basis for rejection of an applicant's invention, the reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the inventor was concerned." (MPEP Section 2141.01(a)). Mulder cannot be relied upon as a basis for rejection of my invention because it does not satisfy either of these two requirements.

16. Mulder is not in the field of applicant's endeavor. As stated at page 1 of the present application, "The present invention relates to methods, compositions and systems for the prevention and treatment of diaper rash." In contrast, Mulder states at Column 1, lines 7-9 that, "The present invention pertains to the field of topical ointments and, more particularly, to products that are used for the treatment of superficial lesions including skin tears." It is stated in the Office Action that Mulder is in the same field of endeavor as the present invention "because both inventions are concerned with skin healing." The undersigned respectfully disagrees with this statement. It is important to recognize that the field of endeavor involving treating skin tear wounds is significantly different than the field of endeavor involving treatment and prevention of diaper rash. A person of ordinary skill in the field of skin tear wounds would understand the importance of giving careful attention to cleaning any and all debris and infectious agents from the

wound, applying medicines to the wound, keeping the wound clean, and ensuring that an unrestricted amount of oxygen is able to reach the wound to allow proper healing. With respect to the latter, a person of ordinary skill in the field of skin tear treatment would readily understand that a barrier-type composition such as those discussed in the present application, should never be applied over a skin tear wound. Numerous studies have shown that the proper healing of skin-breaking wounds is prevented by moisture barrier-type, or "occlusive" products, suppress recovery and reduce the epidermal proliferative response to the wound, while semipermeable, or "breathable," materials do not slow recovery and allow for normal cellular respiration. Thus, a barrier-type composition, or "occlusive product," as described and claimed in the present application simply should not be used in the field of wound care. In contrast, the field of diaper rash treatment, as discussed in detail herein, involves the placement of a robust and impermeable (non-breathable) barrier over an area of skin having, or at risk of experiencing, diaper rash. A barrier composition of this type would be totally unsuitable for placement on an open wound. Thus, barrier-type diaper rash treatment compositions should never be considered desirable for use in connection with a skin tear, and the two are properly considered different fields of endeavor.

17. Mulder is also not reasonably pertinent to the particular problem with which the inventor was concerned. In the development of the present invention, the particular problem with which I was concerned was that:

> products currently available for the treatment of diaper rash...are very viscous and messy to administer to the skin. Such products require that the person applying the product spread the product by rubbing the same into or over the skin. While this requirement is typically acceptable in the case of a parent applying the product to the skin of an infant child, it is a drawback where a caregiver is in charge of providing such a treatment to multiple persons, especially multiple incontinent adults. The application of the product is messy and awkward because the product is difficult to wash off of ones hand due to its oily, hydrophobic nature. Additionally, the caregiver must first use one set of gloves to clean the patient, and then use another set of gloves to apply the ointment or lotion. This results in wasted time and resources.

(Specification, Page 5, lines 3-13). Mulder is not reasonably pertinent to this problem relating to the mess and inefficiency of applying an oily, hydrophobic ointment to a skin treatment area. Rather, Mulder is focused upon addressing the "need for a non-irritating, topical ointment or medicament that is specifically designed to promote the reepithelialization of skin tears." (Mulder, Column 2, lines 18-20). This is not reasonably pertinent to the problem with which I was concerned because a product capable of promoting the reepithelialization of skin tears would not be pertinent to the problem of the mess and inefficiency of applying an oily, hydrophobic diaper rash ointment to a skin treatment area. Furthermore, an oily, hydrophobic barrier-type diaper rash composition should never be used for treating skin tears, as discussed above, because a barrier composition would cause a significant impediment to wound healing. Indeed, the compositions described by Mulder are designed around the concept of washing/flushing the wound site, and thus only a small proportion of the composition applied to the wound would even remain after the flushing was completed. This is a fundamentally different purpose than the purpose of a barrier-type diaper rash composition, which functions optimally by being retained on the skin in its entirety. Thus, the properties that would be desirable in the respective types of compositions are significantly different. As such, Mulder is nonanalogous art because it is not in the field of applicant's endeavor or reasonably pertinent to the particular problem with which the inventor was concerned.

18. In summary (with respect to the Adams/Clark combination), I submit that neither Adams et al. nor Clark et al., nor any other reference of record in this case, would be understood by a person of ordinary skill in the art to provide any teaching, suggestion or motivation to modify their teachings in a manner that would lead to the present invention. While each of Adams et al. and Clark et al. describes a composition that can be used as a treatment for diaper rash, the assertions in the outstanding Action ignore that a person of ordinary skill in the art at the time of the invention would not have combined the references to arrive at the present invention, as suggested in the outstanding Action. A person of ordinary skill in the art would find no motivation in these references to use a highly viscous paste, ointment or cream, or the ingredients thereof, in an aerosol system, or any other type of spray system. A person of ordinary skill in the art would

not have modified a highly viscous paste, ointment or cream protective barrier formulation to make it sprayable, and would not have selected ingredients thereof for inclusion in a spray-on diaper rash composition. Similarly, but from another perspective, a person of ordinary skill in the art would not have modified a low viscosity, sprayable composition by adding high viscosity barrier-type ingredients at a level necessary to provide a barrier-type composition, and would not have selected ingredients thereof for inclusion in a barrier-type ointment.

19. Many of the same principles set forth above concerning the asserted Adams/Clark combination apply equally well to the other combinations asserted in the outstanding Action. With respect to the rejection of claims 39, 40, 44 and 54-58 under 35 U.S.C. §103(a), as being unpatentable over Gebhardt et al. (US 3,584,115) in view of Moss (US 4,816,254), I submit that the invention recited in these claims is not obvious over this combination of references because (1) a person of ordinary skill in the art would not have been motivated to modify the teachings of the cited references in a manner that would be necessary to arrive at the presently claimed invention, (2) the present invention proceeds contrary to accepted wisdom that existed at the time the application was filed, and (3) even if a suggestion would have been made explicitly to a person of ordinary skill in the art at the time of the invention to modify a low viscosity sprayable composition by adding high viscosity barrier-type ingredients at a level necessary to provide a composition having the physical properties described and claimed in the present application, he or she would have expected the operability (i.e., sprayability) of the spray system to be degraded to a point where the modification would not be desirable, and he or she therefore would have had no reasonable expectation of success. Likewise, in the event a suggestion would have been made explicitly to a person of ordinary skill in the art at the time of the application to modify a highly viscous, hydrophobic barrier composition by adding viscosity-reducing or hydrophobicity-reducing ingredients at a level necessary to provide a composition suitable for passage through an atomizing spray dispenser, as described and claimed in the present application, he or she would have expected the operability (i.e., barrier functionality) of the barrier system to be degraded to a point where the modification would not be desirable, and he or she therefore would have had no

reasonable expectation of success, and would have derived no motivation from the cited references to make these modifications.

20. Gebhardt et al., like Adams et al. discussed above, describes "aerosol compositions for the treatment of skin irritations such as diaper rash." In particular, the Gebhart et al. reference describes an aerosol composition for delivering vitamins A and D and d-pantothenyl to treat diaper rash. The formulations described by Gebhart et al., like those described by Adams et al., do not provide moisture barrier protection. The Examiner states that, "Gebhart et al. do not teach the component (2) of the instant claims," but states that various missing ingredients are supplied by Moss. This assertion, like the similar assertion in the Action regarding the Clark et al. reference, fails to support a rejection of the subject claims. There is no motivation to combine the Gebhart et al. and Moss references in the manner suggested in the Action for the same reasons that there is no motivation to combine the Adams et al. and Clark et al. references, discussed above. The undersigned therefore submits that the cited references do not teach or suggest a method as recited in the subject claims, and would not motivate a person of ordinary skill in the art to modify the references to arrive at the present invention.

21. The additional references cited in the outstanding Action, Boussouira et al. (US 6,103,247) and Huffstutler (WO 92/06701), are cited as disclosing the inclusion of specific ingredients in a diaper rash treatment composition. For example, Boussouira et al. is cited in the Action as teaching the use of transparent zinc oxide having an average diameter of 1-500 nm in cosmetic compositions because of its aesthetic appeal, and Huffstutler is cited as teaching the use of comfrey extract in topical compositions for its healing properties and ability to stimulate epithelial development in the case of skin damage or breakdown. However, these references also fail to satisfy the missing teachings or suggestions in the primary references that are discussed above, and these references therefore cannot be combined with the other references to form a proper rejection of claims.

22. I further declare that all statements made herein are of my own knowledge, are true and that all statements made on information and belief are believed to be true; and further that these statements are made with the knowledge that willful false statements and the like so

made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and such willful false statements may jeopardize the validity of the application or any patent issued thereon.

8/16/05
Date

Garret D. Cawthon, Ph.D.

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GARRET D. CAWTHON
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EDUCATION: University of Louisville, Louisville, KY
Entrepreneurship M.B.A. *with Distinction* (1994)

The Ohio State University, Columbus, OH
Ph.D., Chemical Engineering (1988)
Thesis: Optimization of Semibatch Copolymerization Reactions

University of Louisville, Louisville, KY
M.Eng., Chemical Engineering *with Honors* (1984)
B.S., Chemical Engineering (1983)

EXPERIENCE: **Touchless Care Concepts, LLC**, Louisville, KY
Chief Executive Officer (1/99-Present)
Responsible for the development of technology, commercialization of products, establishment of corporate partnerships and financing, and implementation of the company's business plan.

Key Accomplishments:
- Submitted patent applications and began marketing campaign.
- Developed e-commerce web site for on-line ordering.

University of Louisville, Louisville, KY
Adjunct Professor, Chemical Engineering Department (8/02-Present)
Taught the class to (non-thesis option) graduate students in which they develop research proposals and business plans.

University of Louisville, Louisville, KY
Assistant Visiting Professor, School of Business and Public Administration (1/00-5/00)
Taught Principles of Operations Management to undergraduate business students.

Advanced Biorefining Corporation, Louisville, KY
Chief Executive Officer (2/98-12/00)
Prepared and promoted business plan for manufacturing three products from agricultural wastes, such as corn cobs and oat hulls. Optimized technology through lab and pilot scale experimentation. Consulted to other various companies about marketing and technical issues for agriculturally-derived products.

Key Accomplishment:
- Solicited $300,000 in investment capital

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University of Arkansas, Fayetteville, AR
Assistant Visiting Professor, Operations Management (06/95-5/98)
Taught three courses to graduate-level students: Economic Decision Theory, Public Financial Administration, and Principles of Operations Research.

Key Accomplishment:
- Received letter of commendation for excellent teaching from students' performance reviews.

Great Lakes Chemical Corporation, Memphis, TN
Senior Process Engineer (11/94-1/98)
Prepared financial/technical analyses for over two dozen projects, including the largest internal investment within GLCC. Led a team of scientists/engineers in new technology development to decrease the manufacturing costs of a key intermediate by 35%.

Key Accomplishment:
- Commercialized several lab-based products by leading the process design, equipment selection, construction, and start-up activities.

University of Louisville, Louisville, KY
Associate Adjunct Professor, Chemical & Environmental Engineering (9/92-6/94)
Taught two advanced courses in the Chemical Engineering department. Consulted with high-tech firms as a Professional Engineer while completing my M.B.A. degree.

Key Accomplishment:
- Assisted in the development of a business plan for procuring $4,000,000 in start-up capital.
- Completed a strategic management analysis for a small, but rapidly growing medical device manufacturer/distributor.

Ministry of International Trade & Industry, Japan
Engineering Specialist (1/92-6/92)
Completed 6-month project for developing pervaporation membrane systems used to separate trace organics from industrial wastewaters.

Key Accomplishment:
- Improved membrane performance by 40% using novel surface treatment techniques.

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Dow Corning Corporation, Carrollton, Ky
Project Engineer (4/90-9/91)
Provided technical leadership to the start-up of an $8,000,000 silicone manufacturing facility. Directed installation and initial operation of safety systems, storage tanks, and processing equipment. Instructed engineers and technicians in safe work practices. Left to pursue M.B.A. full-time.

Key Accomplishments:
- Achieved safe process operation and production timetable through four months of shift work.
- Debugged the computer control system and optimized process throughput to meet designed performance levels.

Dow Corning Corporation, Midland, MI
Project Engineer (11/87-3/90)
Installed and operated a $400,000 automated pilot plant used to make silicon-based polymer additives. Led a three engineer/four technician team in new product development. Performed laboratory experiments to optimize manufacturing performance.

Key Accomplishments:
- Supplied development-level quantities of new products for customer evaluation studies.
- Awarded U.S. patent for a high-purity ceramic coating used to protect electronic circuitry.
- Coordinated regulatory compliance activities for three production facilities.

Ashland Chemical Corporation, Columbus, OH
Engineering Consultant (6/86-3/87)
Utilized my Ph.D. research to improve product/process performance of polyester and phenol-formaldehyde resins. Coordinated pilot plant and analytical laboratory activities for computer modeling studies.

Key Accomplishment:
- Proposed new manufacturing procedures to lower batch production time by 12%.